

CLAIMS

1. A semiconductor device for executing software including an arithmetic instruction, comprising:
  - a register;
  - an ALU;
  - an arithmetic circuit including a plurality of arithmetic cells and a plurality of register cells for setting a calculation type to be executed by said arithmetic cells and wiring connections between said plurality of arithmetic cells and said plurality of register cells; and
  - a control circuit for generating set data for setting said calculation type of the arithmetic cells and said wiring connections and also generating driver software for performing operation equivalent to said software using said arithmetic circuit on the basis of said software.
2. A semiconductor device according to claim 1, wherein said control circuit is arranged to generate said set data and said driver software during execution of said software using said register and said ALU.
3. A semiconductor device according to claim 2, wherein when processing of said software is repeated  $n$  times, the processing of said software from the first time to the  $i$ -th ( $i < n$ ) time is carried out by executing said software using said register and said ALU, and the processing of the software from the  $(i+1)$ -th time to

the n-th time is carried out by executing said driver software using said arithmetic circuit.

4. A semiconductor device according to claim 1, wherein said driver software includes at least a data transfer instruction from said register to the register cell of said arithmetic circuit and a data transfer instruction from the register cell of said arithmetic circuit to said register.

5. A semiconductor device according to claim 1, wherein said control circuit generates said set data and said driver software by executing the software for generating said set data and said driver software.

6. A semiconductor device according to claim 1, wherein said arithmetic circuit is connected to a bus.

7. A semiconductor device according to claim 1, wherein the number of clock cycles necessary for executing said driver software is smaller than the number of clock cycles necessary for executing said software.

8. A semiconductor device for executing software including an arithmetic instruction, comprising:

a register;

an ALU;

an arithmetic circuit including a plurality of arithmetic cells and a plurality of register cells for setting an calculation type to be executed by said arithmetic cells and wiring connections between said plurality of arithmetic cells and said plurality of

register cells;

a first memory area for storing said software;

a second memory area for storing driver software for performing operation equivalent to said software; and

a control circuit for controlling the software to be executed,

wherein, when processing of said software is repeated  $n$  times, the processing thereof from the first time to the  $i$ -th time ( $i < n$ ) is carried out by executing said software read out from said first memory area using said register and said ALU, said control circuit in response to said first time processing switches the software to be executed to said driver software, and the processing from the  $(i+1)$ -th time to the  $n$ -th time is carried out by executing said driver software read out from said second memory area using said arithmetic circuit.

9. A semiconductor device according to claim 8, wherein said control circuit generates set data for setting the calculation type of said arithmetic cell and said wiring connections on the basis of said software and driver software for performing operation equivalent to said software.

10. A semiconductor device according to claim 8, wherein said control circuit has set data for setting the calculation type of the arithmetic circuit and said

PART 34 AMDT

wiring connections, and said arithmetic circuit sets the calculation type of said arithmetic cells and said wiring connections.

11. A semiconductor device according to claim 8, wherein said driver software includes at least a data transfer instruction from said register to the register cell of said arithmetic circuit and a data transfer instruction from the register cell of said arithmetic circuit to said register.

12. A semiconductor device according to claim 8, wherein the number of clock cycles necessary for executing said driver software is smaller than the number of clock cycles necessary for executing said software.